Claims

1. An mRNA and sequences which hybridize thereto under stringent conditions that encode VNO receptor protein or fragment thereof selected from the group consisting of SEQ ID Nos. 3, 4, and 6.

2. A cDNA and sequences which hybridize thereto under stringent conditions that encode VNO receptor protein or fragment thereof selected from the group consisting of SEQ ID Nos. 3, 4, and 6.

3. A cDNA selected from the group comprising SEQ ID Nos. 1, 2, 5 and 7.

4. A cDNA and sequences which hybridize thereto under stringent conditions comprising residues 17-1088 of SEQ ID No. 1.

5. A cDNA and sequences which hybridize thereto under stringent conditions comprising residues 44-1088 of SEQ ID No. 1.

6. An expression vector comprising a cDNA and sequences which hybridize thereto under stringent conditions that encode VNO receptor protein or fragment thereof selected from the group consisting of SEQ ID Nos. 3, 4, and 6, wherein said vector is capable of expressing the encoded protein when introduced into a competent host cell.

7. An expression vector comprising a cDNA and sequences which hybridize thereto under stringent conditions comprising residues 17-1088 of SEQ ID No. 1, wherein said vector is capable of expressing the encoded protein when introduced into a competent host cell.

8. An expression vector comprising a cDNA and sequences which hybridize thereto under stringent conditions comprising residues 44-1088 of SEQ ID No. 1, wherein said vector is capable of expressing the encoded protein when introduced into a competent host cell.

9. An expression vector able to induce the synthesis of an antisense RNA which modulates expression of a receptor protein or fragment thereof selected from the group consisting of SEQ ID Nos. 3, 4, and 6.

10. A transformed cell line wherein said cell line expresses a human pheromone receptor having the amino acid sequence selected from the group consisting of SEQ ID Nos. 3, 4, and 6.

11. A transformed cell wherein said cell expresses a human pheromone receptor having the amino acid sequence selected from the group consisting of SEQ ID Nos. 3, 4, and 6.

12. The cell line of Claim 10 wherein the cells are eukaryotic.

13. The cell line of Claim 10 wherein the cells are prokaryotic.

14. The cell line of Claim 10 wherein the cells stably express a human pheromone receptor.

15. The cell line of Claim 10 wherein the cells transiently express a human pheromone receptor.

16. A protein comprising the amino acid sequence SEQ ID No. 3 and analogs thereof having about 95% homology and exhibiting VNO receptoractivity .

17. A protein comprising the amino acid sequence SEQ ID No. 4 and analogs thereof having about 95% homology and exhibiting VNO receptor activity.

18. A protein comprising the amino acid sequence SEQ ID No. 6 and analogs thereof having about 95% homology.

19. A high throughput assay comprising the cell line of Claim 10 for the identification of agents that interact with a human pheromone receptor or fragment thereof selected from the group consisting of SEQ ID Nos. 3, 4 and 6.

20. A high throughput assay comprising the cell line of Claim 10 for the identification of agents that interact with a human pheromone receptor or fragment thereof selected from the group consisting of SEQ ID Nos. 3, 4 and 6 wherein said ligands are useful for the treatment of depression, anxiety, phobias, blood pressure, pain, pre-menstrual syndrome, endocrine disorders, sleep disorders, alertness, and sexual desire.

21. Antibodies to a protein having an amino acid sequence selected from the group consisting of SEQ ID Nos. 3, 4 and 6.

22. An antisense oligonucleotide sequence capable of blocking the expression of hVNO-R1 (SEQ ID No. 1).

23. An antisense oligonucleotide according to Claim 22 wherein said antisense oligonucleotide is between 7 and 30 residues in length.

24. A transgenic animal which functionally expresses the protein sequence selected from the group consisting of SEQ ID Nos. 3 and 4.

25. An RNA sequence and sequences which hybridize thereto under stringent conditions that encode a VNO receptor protein or fragment thereof selected from the group consisting of SEQ ID Nos. 3, 4 and 6, suitably labeled as a probe to identify a nucleic acid sequence encoding related pheromone receptors.

26. A DNA sequence and sequences which hybridize thereto under stringent conditions that encode a VNO receptor protein or fragment thereof selected from the group consisting of SEQ ID Nos. 3, 4 and 6, suitably labeled as a probe to identify a nucleic acid sequence encoding related pheromone receptors.

27. A nucleic acid sequence capable of hybridizing under low to moderate stringency conditions to at least one member of the group consisting of SEQ ID Nos. 1, 2, 5 and 7 wherein said nucleic acid sequence is suitably labeled as a probe to identify related receptor sequences and comprises at least 10 nucleic acid residues.

28. A ligand capable of interacting with a human pheromone receptor selected from the group consisting of SEQ ID Nos. 3, 4 and 6.

29. The ligand of Claim 28 wherein the ligand is a naturally occurring agonist.

30. The ligand of Claim 28 wherein the ligand is a synthetic agonist.

31. The ligand of Claim 28 wherein the ligand is a naturally occurring antagonist.

32. The ligand of Claim 28 wherein the ligand is a synthetic antagonist.

33. A therapeutically effective amount of the ligand of Claim 28 wherein the ligand is useful in the treatment of depression, anxiety, phobias, blood pressure, pain, pre-menstrual syndrome, endocrine disorders, sleep disorders, alertness, and sexual desire.

34. A genetic test based on the difference between the two alleles of the receptor gene SEQ ID No.1 and SEQ ID No. 5 wherein said test identifies a subject who may benefit from activation of the receptor.

35. A genetic test based on the difference between the two alleles of the receptor gene SEQ ID No. 1 and SEQ ID No. 5 wherein said test identifies a subject who may benefit from inhibition of the receptor.

36. A genetic test based on the difference between the two alleles of the receptor gene SEQ ID No. 1 and SEQ ID No. 5 wherein said test identifies a subject who may benefit from gene therapy with the expression vector comprising SEQ ID No. 1 or 2.

37. A genetic test based on the difference between the two alleles of the receptor gene SEQ ID No.1 and SEQ ID No. 5 wherein said test identifies a subject who may benefit from gene therapy with the expression vector comprising SEQ ID No. 7.

38. Gene therapy wherein a subject is administered the expression vector comprising SEQ ID No. 1 or 2.

39. Gene therapy wherein a subject is administered the expression vector comprising SEQ ID No. 7 or 8.

40. Gene therapy wherein a subject is administered the expression vector encoding a VNO receptor protein or fragment thereof selected from the group consisting of SEQ ID Nos. 3, 4 and 6.

41. Gene therapy wherein a subject is administered the antisense expression vector of Claim 9 to modulate expression of the receptor.

42. Gene therapy wherein a subject is administered the antisense oligonucleotide of Claim 22 to modulate expression of the receptor.